Module 9: Environmental Emergencies

1. In which of the following ways does the body produce heat in response to being cold?
   a. Excreting more urine
   b. Burning fewer calories
   c. Shivering
   d. Increasing the respiratory rate

2. In which of the following situations would a person lose heat by conduction?
   a. Sitting on cold metal bleachers at a football game
   b. Wearing wet clothing in windy weather
   c. Breathing
   d. Going outside without a coat during a cold but calm day

3. When the body is in water, how many times faster does it lose heat than when it is in still air?
   a. 2
   b. 100
   c. 10
   d. 25

4. A patient who is lying on cold ground is losing the most amount of heat by what mechanism?
   a. Radiation
   b. Convection
   c. Conduction
   d. Shivering

5. Which of the following is the process in which heat is lost from the body as wind passes over it?
   a. Convection
   b. Hydrodynamic cooling
   c. Exposure
   d. Condensation

6. Which of the following is the most significant way in which the body cools itself?
   a. Respiration
   b. Perspiration
   c. Radiation
   d. Vasoconstriction

7. Why is it important to keep patients at rest when they are hypothermic?
   a. Since the blood is warmest in the extremities, exercise or unnecessary movement could quickly circulate the warm blood and raises the core body temperature.
   b. Since the blood is coldest in the extremities, exercise or unnecessary movement could quickly circulate the cold blood and drop the blood pressure.
   c. Since the blood is coldest in the extremities, exercise or unnecessary movement could quickly circulate the cold blood and lower the core body temperature.
   d. None of the above

8. Which of the following does NOT make infants and children more prone to hypothermia?
   a. Inefficient metabolism
   b. Large body surface area
   c. Small muscle mass
   d. Little body fat

9. Which of the following terms describes the temperature of the surrounding air?
   a. Wind chill index
   b. Shell temperature
   c. Core temperature
   d. Ambient temperature

10. **In cases of extreme hypothermia, you will find the patient unconscious, with no discernible vital signs, and skin cold to your touch with stiff joints as if they appear dead. What is the emergency care for these patients?**
    a. Contact medical control for input into the best treatment for this patient.
    b. Call the coroner as indications are the patient is cold and deceased, which is a definitive sign of death.
    c. Check distal CSM, apply warming packs to the extremities, and transport the patient.
    d. Assess the carotid pulse for 30 to 45 seconds; if there is no pulse, start CPR immediately and prepare to apply the AED.

11. **To assess skin temperature for a possibly hypothermic patient, the EMT should place the back of his hand against which part of the patient's body?**
    a. Forehead
    b. Cheek
    c. Abdomen
    d. Inner wrist

12. **Allowing a patient's body temperature to increase by preventing further heat loss is referred to as which of the following?**
    a. Core rewarming
    b. Passive rewarming
    c. Active rewarming
    d. Natural rewarming

13. **Applying an external source of heat to the patient's body to rewarm him is called _____ rewarming.**
    a. central
    b. active
    c. endogenous
    d. peripheral

14. **The technique for central rewarming requires the application of heat to which of the following areas of the patient's body?**
    a. Chest, back, neck, and armpits
    b. Lateral chest, neck, armpits, and groin
    c. Head, neck, chest, and back
    d. Head, neck, chest, and groin

15. **Which of the following is acceptable when actively rewarming a hypothermic patient?**
    a. Encouraging the patient to exercise
    b. Giving coffee or brandy to drink
    c. Warming the patient as quickly as possible
    d. Applying humidified oxygen

16. **In a hypothermic patient the coldest blood is found in what part of the patient's body?**
    a. Intestines
    b. Heart and lungs
    c. Head
    d. Extremities

17. **You arrive on the scene and find an unresponsive homeless man lying in the alleyway clutching a wine bottle. He is wearing a long-sleeved shirt, but does not have pants on. His skin feels cold to the touch. The week's temperatures have not been above 50°F. Which of the following should you do immediately after ensuring the patient has an adequate airway?**
    a. Apply the AED.
    b. Provide manual stabilization of the cervical spine.
    c. Begin passive rewarming.
    d. Check the pulse.

18. Rough handling of a patient with severe hypothermia may result in which of the following?
    a. Ventricular fibrillation
    b. Seizures
    c. Heart attack
    d. Rewarming shock

19. When resuscitating a hypothermic patient in cardiac arrest, resuscitation attempts must continue until the patient has:
    a. been ventilated for at least 30 minutes with an oropharyngeal airway in place.
    b. developed rigor mortis.
    c. been defibrillated a total of nine times.
    d. been rewarmed.

20. Which of the following is NOT a classification of localized cold injury?
    a. Hypothermia
    b. Frostbite
    c. Frostnip
    d. All of the above are localized cold injuries.

21. **The term *gangrene* means tissue:**
    a. damage.
    b. discoloration.
    c. infection.
    d. death.

22. Localized cold injury occurs due to vasoconstriction and:
    a. chemical imbalance in the tissues.
    b. blood clots.
    c. ice crystal formation in the tissues.
    d. loss of calcium.

23. Which of the following BEST describes a localized cold injury with a clear line of demarcation of its limits?
    a. Early frostnip
    b. Late frostbite
    c. Immersion foot
    d. Deep frostnip

24. **The term *blanching*, used to describe localized cold injury, means the tissue has turned to which of the following colors?**
    a. White or lighter
    b. Blue or purple
    c. Red
    d. Black

25. Which of the following should the EMT do during the treatment of localized cold injury?
    a. Encourage the patient to use the affected part.
    b. Rub the affected area with snow.
    c. Massage the affected area.
    d. Gradually warm the affected area.

26. **When actively rewarming a frostbitten extremity in warm water, you should change the water when the temperature falls below _____ °F.**
    a. 115–120
    b. 100–105
    c. 85–95
    d. 80–90

27. **Which of the following describes the condition of having an abnormally high body temperature?**
    a. Hyperthermia
    b. Septic shock
    c. Hyperdynamic state
    d. Heat shock

28. **For which of the following reasons are newborns, infants, and the elderly more readily affected by the heat than other age groups?**
    a. Faster metabolism
    b. Increased body mass
    c. Inadequate salt intake
    d. Poor ability to regulate body temperature

29. **Heat cramps occur due to loss of which of the following substances?**
    a. Water
    b. Salt
    c. Magnesium
    d. Water and potassium

30. **Heat stroke is caused by which of the following mechanisms?**
    a. Blockage of blood flow to the brain
    b. Extreme dilation of all the blood vessels
    c. Failure of temperature regulation mechanisms
    d. Heat-induced swelling of brain tissue

31. **When submerged in water, biological death may be delayed if the water temperature is below _____ °F.**
    a. 70
    b. 98.6
    c. 50
    d. 32

32. **Regarding drowning in adults, which of the following statements is true?**
    a. Colder water improves survival chances in saltwater drowning but not in freshwater drowning.
    b. Water temperature makes no difference in the chances of survival in either saltwater or freshwater drowning.
    c. The colder the water, the better the chances of survival in either saltwater or freshwater drowning.
    d. The warmer the water, the better the chances of survival in saltwater drowning.

33. **Which of the following spiders can cause a characteristic wound with a bite that is often painless?**
    a. Brown recluse spider
    b. Sheet web spider
    c. Argiope spider
    d. Black widow spider

34. **Where should a constricting band be placed to reduce lymphatic flow after a venomous snake bite?**
    a. Two inches above the bite
    b. Two inches below the bite
    c. Two inches above and two inches below the bite
    d. None of the above; constricting bands should not be used.

35. **The purpose of a constricting band after a venomous snake bite is to impede the flow of which of the following?**
    a. Lymph
    b. Arterial blood
    c. Venom
    d. Both A and C

36. **Of the following venomous snakes, which one usually has the highest incidence of a "dry bite"?**
    a. Coral snake
    b. Water moccasin
    c. Mississauga rattlesnake
    d. Copperhead

37. **Which of the following could worsen the effects of a snake bite?**
    a. Application of ice
    b. Cutting and suctioning out the venom
    c. Constricting bands above and below the bite
    d. All of the above

38. **Reducing the pain of a marine animal sting can be accomplished by rinsing the affected area with which of the following?**
    a. Sterile saline solution
    b. Gasoline or kerosene
    c. Cold water
    d. Vinegar

39. **Which of the following occurs when gases leave a damaged lung in a diving accident and enter the bloodstream?**
    a. Arterial thrombosis
    b. Arterial blood gases
    c. Hyperbaric arterial injury
    d. Arterial gas embolism

40. **Which of the following is caused by trapped nitrogen gas in the tissues due to a rapid ascent from a scuba dive?**
    a. "Squeeze" injuries of the ear and sinuses
    b. Pulmonary embolism
    c. Decompression sickness
    d. Nitrogen narcosis

41. **Which of the following increases a scuba diver's risk of decompression sickness?**
    a. Taking cold or sinus medications before a dive
    b. Flying within several hours after a dive
    c. Diving on a full stomach
    d. Breathing 100 percent oxygen before a dive

42. **You arrive on the scene to find a scuba diver on board a boat slumped over in the captain's chair with frothy blood in his mouth. The captain states that the diver was down no more than 15 feet when he ascended rapidly and called for help. Which of the following is most likely?**
    a. Decompression sickness
    b. The bends
    c. Air embolism
    d. Caisson's disease

43. **Which of the following types of snake is NOT a pit viper?**
    a. Water moccasin
    b. Rattlesnake
    c. Coral snake
    d. Copperhead

44. **You are enjoying some time at the beach on your day off when you hear a swimmer crying for help. As you spot the swimmer about 30 feet from shore, she cries out again but appears to be getting weaker. Although there is no lifeguard on duty, there is a rowboat and a ring buoy available. Assuming you do NOT know how to swim or consider yourself a poor swimmer, which of the following should you do first?**
    a. Row the boat out to the swimmer.
    b. Use the buoy to float out to the swimmer.
    c. Find someone who can swim to try to swim out and save the swimmer.
    d. Call for help and try to throw the buoy to the swimmer.

45. **To rescue someone who has fallen through the ice, which of the following is the safest device to use?**
    a. A jet-ski
    b. A flat-bottomed aluminum boat
    c. A ladder
    d. A ring buoy

46. **Most radiant heat is lost through which part of the body?**
    a. The hands and feet
    b. The head
    c. The buttocks
    d. The torso

47. **Which of the following signs would you NOT expect to see in a patient suffering from severe hypothermia?**
    a. Numbness
    b. Shivering
    c. Drowsiness
    d. Skin cool to touch

48. **Why is it important to remove constricting items such as rings before thawing a frozen extremity?**
    a. Because thawed areas often swell
    b. To prevent damage to the property such as rings and watches
    c. Because thawing leaves clots behind in the veins
    d. All of the above

49. **Which of the following would you expect to see in a patient with severe hypothermia?**
    a. Irrational behavior
    b. Loss of muscle tone
    c. Rapid respirations
    d. Tachycardia

50. **In a patient with extreme hypothermia who appears to be in cardiac arrest, you should assess the pulse for how long?**
    a. 30 to 45 seconds
    b. 20 to 30 seconds
    c. 5 to 10 seconds
    d. 15 to 20 seconds

51. **Your patient is a 24-year-old man who smoked a cigarette dipped in formaldehyde and then went outside with no shoes on and walked in the snow for about an hour. He has deep local cold injuries to both feet. Which of the following should be included in your management of this patient?**
    a. Break blisters before wrapping both feet in sterile dressings.
    b. Have the patient sit with his feet lower than the rest of his body.
    c. Gradually rewarm both feet.
    d. Massage the feet briskly.

52. **Your patient is a 44-year-old female with a history of alcoholism. She has been walking around at an outdoor fair on a hot, sunny day. She is disoriented to time; has hot, dry skin; and appears to be generally weak. Which of the following is the appropriate sequence of treatment for this patient?**
    a. Have the patient drink an electrolyte solution or sports drink and apply cold packs to her neck, armpits, and groin.
    b. Get as much ice as possible from the food vendors at the fair, place the patient in a large container of ice, and apply oxygen by nonrebreather mask.
    c. Give oxygen by nonrebreather mask, have the patient sip a sports drink or electrolyte solution, remove heavy clothing, and place cold packs on her neck, armpits, and groin.
    d. Give oxygen by nonrebreather mask, remove heavy clothing, and place cold packs on her neck, armpits, and groin.

53. **Which of the following is often associated with water-related emergencies?**
    a. Hypothermia
    b. Cardiac arrest
    c. Alcohol use
    d. All of the above

54. **Which of the following is acceptable in the management of a patient stung by a honey bee?**
    a. Soak the affected area in warm water.
    b. Pull the stinger out using tweezers.
    c. Remove jewelry from any affected limbs.
    d. Elevate the affected site above the level of the heart to reduce swelling.

55. **Why are infants and young children more prone to hypothermia than adults?**
    a. Their immune system is not fully developed.
    b. They are unable to recognize how cold they are.
    c. They shiver more than adults.
    d. They have less fat than adults.

56. **Who is the most susceptible to hypothermia?**
    a. A 21-year-old near-drowning patient on a warm spring day
    b. A 55-year-old male patient who sprained his knee snow skiing
    c. A 76-year-old male patient involved in a vehicle accident on icy roads
    d. An 80-year-old male patient on the ground who slipped and has a hip fracture

57. **You respond to the scene of a 14-year-old patient. He is unresponsive and hypothermic. Emergency Medical Responders have moved the patient inside and secured the airway prior to your arrival. What is your next action?**
    a. Vigorously rub the patient to increase the body temperature.
    b. Actively rewarm the patient.
    c. Passively rewarm the patient.
    d. Assess for signs of frostbite and treat immediately.

58. **You respond to a construction site on a very hot summer day for a person "not acting right." You find a 44-year-old male patient seated in a work vehicle with the air conditioner on maximum. Coworkers state the patient was working for the last 2 hours pouring concrete when he started " speaking gibberish" and nearly collapsed. The patient is responsive to verbal stimuli. Your initial vital signs are blood pressure 90/60, pulse 136, and respiratory rate 24. The patient's skin is cool to the touch and dry, but his shirt is wet with visible salt rings. You suspect:**
    a. heat cramps.
    b. hypernatremia.
    c. heat exhaustion.
    d. myocardial infarction.

59. **You respond to a construction site on a very hot summer day for a person "not acting right." You find a 38-year-old male patient seated in a work vehicle with the air conditioner on maximum. Coworkers state the patient was working for the last 2 hours pouring concrete when he started " speaking gibberish" and nearly collapsed. The patient is responsive to verbal stimuli. Your initial vital signs are blood pressure 90/60, pulse 136, and respiratory rate 24. The patient's skin is cool to the touch and dry but his shirt is wet with visible salt rings. Which is the best treatment for the patient?**
    a. Apply high-concentration oxygen and rapidly transport to the nearest medical facility.
    b. Have the patient slip water slowly to replace what he has lost.
    c. Cool the patient with tepid water.
    d. Have the patient drink at least 1 liter of water to replace what he has lost.

60. **You respond to a professional volleyball tournament for a potential heatstroke. Upon arrival you find a 28-year-old male patient seated inside the air-conditioned first aid trailer. He is alert and in obvious distress. He is complaining of severe cramping of his arms and legs. His vital signs are stable. What is the most likely cause of the cramping?**
    a. Heat exhaustion
    b. Drinking too many sports drinks
    c. Sweating too much
    d. Cooling off too quickly

61. **You have responded to a local pool for a drowning patient. Lifeguards have pulled the patient out of the pool prior to your arrival. You find the 16-year-old patient unresponsive with agonal respirations and a weak carotid pulse. What is your first action?**
    a. Apply high-concentration oxygen by nonrebreather mask.
    b. Apply high-concentration oxygen by bag-valve mask.
    c. Insert a Combitube.
    d. Insert an oropharyngeal airway.

62. **You have responded to a local pool for a drowning patient. Lifeguards have pulled the patient out of the pool prior to your arrival. You find a 22-year-old male patient unresponsive with agonal respirations and a weak carotid pulse. Bystanders state the patient was not using the diving board and was found in the shallow end. Why are c-spine precautions necessary?**
    a. The patient may have suffered a spinal injury by jumping in shallow water.
    b. The patient may have suffered a cervical spine injury when pulled out of the water.
    c. The patient may have been using the diving board after all and injured his cervical spine.
    d. The patient may have hit his head on the side wall while swimming laps.

63. **You respond to a boat dock for a diving injury. You find a 24-year-old male patient unresponsive with frothy blood in the mouth and lung sounds absent on the right side. The patient's friends state they were diving when he came out of the water complaining of chest pains and then collapsed. What condition do you suspect?**
    a. Myocardial infarction
    b. Decompression sickness
    c. Air embolism
    d. Near drowning

64. **You respond to a boat dock for a diving injury. You find a 24-year-old male patient unresponsive with frothy blood in the mouth and lung sounds absent on the right side. The patient is breathing 28 times a minute. The patient's friends state they were diving when he unexpectedly came out of the water complaining of chest pains and then collapsed. What is your first action?**
    a. Insert an oropharyngeal airway.
    b. Place the patient on high-concentration oxygen by nonrebreather mask.
    c. Place the patient on high-concentration oxygen by bag-valve mask.
    d. Suction the airway.

65. **You respond to a boat dock for a diving injury. You find a 22-year-old female patient unresponsive with frothy blood in the mouth and lung sounds absent on the right side. The patient is breathing 28 times a minute. The patient's friends state they were diving when she unexpectedly came out of the water complaining of chest pains and then collapsed. The nearest hospital is 25 minutes away and the nearest specialty resource center with a hyperbaric chamber is 30 minutes away. What is the best decision when determining transport?**
    a. Transport the patient by ground to the specialty center.
    b. Transport by air medical to the specialty center.
    c. Transport to the nearest facility.
    d. Transport by air medical to the nearest facility.

66. **You respond to the scene of a local campground. Your patient is a 15-year-old female patient who was stung in the arm by a bee. The patient is anxious and hyperventilating at 28 times a minute. The patient is alert and oriented to time, place, person, and event. Lung sounds are clear bilaterally. The left arm is swollen and the stinger is not present. Blood pressure is 118/72 and pulse is 110. The patient's mother states she is allergic to bee stings and has an epinephrine auto-injector. She called 911 because she was afraid the patient would stop breathing. Select the best treatment plan.**
    a. Place a constricting band around the arm to minimize the spread of the venom.
    b. Assist the patient in administering her epinephrine auto-injector.
    c. Monitor the patient for shock and transport.
    d. Place the patient in the Trendelenburg position.

67. **You respond to a farm for a possible snake bite. You find a 36-year-old male patient seated against a tree. Bystanders state the patient was bitten on the arm by a rattlesnake and is "really sick." As you approach, you notice that the patient appears in obvious distress, diaphoretic and holding his right wrist. What is your highest priority?**
    a. Perform a primary assessment and identify any potential life threats.
    b. Confirm the type of snake and contact medical control for specific instructions.
    c. Immediately apply a constricting band to minimize the spread of the venom.
    d. Confirm the location and status of the snake.

68. **You respond to a landing zone to pick up a skier who was lost in the woods for 36 hours and found by the search and rescue helicopter. Your patient is a 19-year-old male patient. He is alert and oriented to time, person, place, and event. He is covered in blankets and shivering. He complains of not being able to feel his fingers. Physical exam reveals that the fingers of both extremities have a waxy appearance and feel "frozen" on the surface. After treating the patient for potential hypothermia and rapid transport, your next action is to:**
    a. bandage the digits.
    b. actively rewarm the digits.
    c. gently warm the digits by slowly massaging them.
    d. keep the digits frozen on ice until they can be properly rewarmed at the hospital.

69. **You are on a stand-by at a local high school football game. One of the football players comes over to the ambulance and complains that his face feels numb and that he has a burning sensation in his fingers. You notice that the patient's cheeks and fingers are bright red. How should you treat the patient?**
    a. Allow the patient to warm up inside the ambulance by passive rewarming measures.
    b. Place the patient inside the ambulance and begin active rewarming measures.
    c. Warm the affected areas with gentle rubbing.
    d. Tell the patient that his condition is superficial and allow him to return to the game.

Module 9: Environmental Emergencies

Test Name: Mod 9 environmental

1. c. Shivering
2. a. Sitting on cold metal bleachers at a football game
3. d. 25
4. c. Conduction
5. a. Convection
6. b. Perspiration
7. a. Since the blood is warmest in the extremities, exercise or unnecessary movement could quickly circulate the warm blood and raises the core body temperature.
8. a. Inefficient metabolism
9. d. Ambient temperature
10. d. Assess the carotid pulse for 30 to 45 seconds; if there is no pulse, start CPR immediately and prepare to apply the AED.
11. c. Abdomen
12. b. Passive rewarming
13. b. active
14. b. Lateral chest, neck, armpits, and groin
15. d. Applying humidified oxygen
16. d. Extremities
17. d. Check the pulse.
18. a. Ventricular fibrillation
19. d. been rewarmed.
20. a. Hypothermia
21. d. death.
22. c. ice crystal formation in the tissues.
23. a. Early frostnip
24. a. White or lighter
25. d. Gradually warm the affected area.
26. b. 100–105
27. a. Hyperthermia
28. d. Poor ability to regulate body temperature
29. b. Salt
30. c. Failure of temperature regulation mechanisms
31. a. 70
32. c. The colder the water, the better the chances of survival in either saltwater or freshwater drowning.
33. a. Brown recluse spider
34. c. Two inches above and two inches below the bite
35. a. Lymph
36. a. Coral snake
37. a. Application of ice
38. d. Vinegar
39. d. Arterial gas embolism
40. c. Decompression sickness
41. b. Flying within several hours after a dive
42. c. Air embolism
43. c. Coral snake
44. d. Call for help and try to throw the buoy to the swimmer.
45. b. A flat-bottomed aluminum boat
46. b. The head
47. b. Shivering
48. a. Because thawed areas often swell
49. a. Irrational behavior
50. a. 30 to 45 seconds
51. c. Gradually rewarm both feet.
52. d. Give oxygen by nonrebreather mask, remove heavy clothing, and place cold packs on her neck, armpits, and groin.

53. d. All of the above
54. c. Remove jewelry from any affected limbs.
55. d. They have less fat than adults.
56. a. A 21-year-old near-drowning patient on a warm spring day
57. c. Passively rewarm the patient.
58. c. heat exhaustion.
59. a. Apply high-concentration oxygen and rapidly transport to the nearest medical facility.
60. c. Sweating too much
61. d. Insert an oropharyngeal airway.
62. a. The patient may have suffered a spinal injury by jumping in shallow water.
63. c. Air embolism
64. d. Suction the airway.
65. a. Transport the patient by ground to the specialty center.
66. c. Monitor the patient for shock and transport.
67. d. Confirm the location and status of the snake.
68. a. bandage the digits.
69. a. Allow the patient to warm up inside the ambulance by passive rewarming measures.